

REMARKS

Applicants respectfully request reconsideration of this application in view of the foregoing amendment and following remarks.

Status of the Claims

Claims 1-18 are pending in this application. Claims 1 and 2 are independent. All of the pending claims stand rejected. By this amendment, claims 1 and 2 are amended. New claims 19 and 20 are added. No new matter has been added by this amendment.

Rejection under 35 U.S.C. §103

In paragraph three (3) of the Office Action, claims 1-18 have been rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,972,635 to McCorquodale et al. (“McCorquodale”) in view of U.S. Patent No. 6,362,698 to Gupta (“Gupta”) and U.S. Patent No. 6,268,778 to Mucke et al. (“Mucke”).

The Office Action admitted that McCorquodale fails to show the details of the PLL system which includes the LPF, phase detector and charge pump for generating the DC control voltage to control the VCO. The Office Action then cites Gupta as disclosing the PLL system. In particular, the Office Action refers to Fig. 1 of Gupta for the basis of the rejection (see page 4 of the Office Action). Mucke is cited as disclosing integrated type capacitance elements formed by MOSFETs.

Gupta discloses a circuit that conditions an input control voltage signal that is used to drive an LC tank oscillator in a phase locked loop. Fig. 1 of Gupta discloses a prior art PLL circuit 10 in which a phase detector 12 and a divider 22 are used in a feedback loop. For example, an output from the VCO 18 is fed back through the divider 22 and the phase detector.

Independent claims 1 and 2 have been amended for further clarification. In particular, each of amended claims 1 and 2 recites, *inter alia*, “a (second) frequency divider circuit ... generating at least two signals having an equal frequency and different phases by 180° from each other.” Support for the amendment may be found, for example, Fig. 2 and page 13, lines 10-16 of the original specification.

One of the aspects of the present invention as recited in amended claims 1 and 2 is generating at least two output signals by the frequency divider and the two signals have an equal frequency and different phases by 180° from each other. These output signals are generally inputted to a mixing circuit where they are combined with a received signals by an antenna thereby converting the frequency of the received signal.

With the features of the present invention, a higher frequency ($n*f$) than the target frequency (f) can be generated from the oscillating unit enabling the required values of the inductance and capacitors are formed on an IC board. See, also, page 11, lines 11-18 of the original specification.

Applicants note that the output from the divider 22 (i.e., “DIVISION BY N”) of Gupta as shown in Fig. 1 does not have such a feature as discussed above, i.e., a single output 20 is inputted to the phase detector 12 in Gupta.

Accordingly, each of claims 1 and 2 as amended is believed to be patentable over the cited references (i.e., McCorquodale, Gupta and Mucke), either taken alone or in combination, for at least the reasons discussed above.

Reconsideration and withdrawal of the rejections of claims 1 and 2 under 35 U.S.C. §103(a) is respectfully requested.

Applicants have not individually addressed the rejections of the dependent claims because Applicants submit that the independent claims from which they respectively depend are in condition for allowance as set forth above. Applicants however reserve the right to address such rejections of the dependent claims should such be necessary.

New Claims

New claims 19 and 20 have been added to recite the claimed invention in an alternative way. Each of new claims 19 and 20 recites that the output of the frequency divider is input to a mixing circuit where the output of the frequency divider is mixed with a received signal thereby converting the frequency of the received signal into a predetermined frequency. Since new claims 19 and 20 depend from claims 1 and 2, respectively, as amended, these new claims also believed to be allowable over the cited art of record for at least the similar reasons as discussed above for claims 1 and 2.

Applicants believe that the application is in condition for allowance and such action is respectfully requested.